

To: Dana Backer[dbacker@blm.gov]
From: Betenson, Matthew
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From: **Betenson, Matthew** <mbetenso@blm.gov>
Date: Wed, Aug 30, 2017 at 8:33 AM
Subject: Doc to fix
To: "Grimm, Paul" <pgrimm@blm.gov>

Hi Paul,
Thanks for your help with this!

--

Matt Betenson
Associate Monument Manager

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THE SECRETARY OF THE INTERIOR

WASHINGTON

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Memorandum

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Director, Bureau of Land Management

To:

From: s _ecreury

Subject Management of the Grand Staircase - Escalante National Monument

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On September 15, 1996, the President created by Proclamation the Grand Staircase - Escalante

National Monument in Utah. This is the first National Monument in history for which management responsibility has been given to the Bureau of Land Management (BLM), offering BLM a highly visible opportunity to demonstrate its stewardship. The purposes of this memorandum are: (a) to direct that you issue interim guidance for managing the Monument during the next three years; and

to direct you to prepare the management plan for the Monument for my adoption (by the end of that period;

The President's Proclamation directs management of the Monument pursuant to applicable legal authorities, including the Federal Land Policy and Management Act (FLPMA) and the National Environmental Policy Act (NEPA). Further, I want to make certain that we work very closely with the State of Utah as our efforts proceed. While stewardship of the Grand Staircase - Escalante

National Monument is the responsibility of this Department, I believe an effective working

relationship with the State is crucial to the development of an effective management plan. The State possesses expertise in numerous management disciplines, and its capabilities will complement our

own.

INTERIM MANAGEMENT DIRECTION

The public should have more explicit information concerning the management of specific activities

during the three year interim period. Accordingly, I ask that you issue appropriate guidance to field managers as soon as possible. Field managers should be fully conversant with that guidance and initiate efforts to provide information to the public as necessary.

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unique geologic, paleontological, ecological, biological and historical values. It also stated that valid existing rights (VER) must be recognized, withdrew Federal lands and interests in lands within the Monument from entry, location, selection, sale, lease, or other disposition (except exchange). Under the public land laws including, oil and gas, the mineral leasing, and mining laws, and stated that existing grazing uses shall continue to be governed by applicable laws and regulations other than the Proclamation. As a general principle,

actions that are not precluded by the Proclamation and which do not conflict with the established purposes of the Monument may continue..

DEVELOPING THE MONUMENT MANAGEMENT PLAN

The President's Proclamation directed me to prepare, within three years, a management plan for the Monument and any necessary regulations. . You should take the lead in preparing the plan and proposing it for my adoption. In preparing the plan, you must make certain that it reflects the purposes for which the Monument was established.

In order to assure an effective planning effort, you should develop a detailed inventory of significant resources within the Monument's boundaries which have been identified thus far through available sources. The inventory should have a usable format and be easy to update as new information becomes available. Attached is a bibliography of monument resources that was completed, in connection with the Proclamation. Although there is considerable understanding of the Monument's attributes, much more work is needed to identify, assess, interpret and protect them in an integrated manner:

In addition to the State, local and Tribal governments, the private sector, the public and other Federal agencies have interests and insights as to managing the Monument's resources and integrating the Monument with local community development. I expect you to be energetic and innovative in

working with these entities. Many models for involving our neighbors have been developed and implemented. Useful lessons can be drawn from these models throughout the West by both government and non-government entities.

The management of the Grand Staircase-Escalante National Monument is one of the Department's most visible and important priorities. Your work will have a profound impact on the public's assessment of the Bureau and of Federal land management in general. I know that the challenges of managing the Monument and preparing its management plan are significant and encompass a very broad variety of scientific, historical, and economic considerations. The Bureau will have my full support and encouragement as your efforts proceed.

Attachment

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Grand Staircase Escalante National Monument
List of Historic and Scientific objects of Interest

Objects of Geologic Interest

Description: Perennial streams enter entrenched canyons in white **Navajo** and deep red Windgate Sandstone. Deer Creek, Steep Creek, and The Gulch have perennial flows of clear cold water. The Gulch leads up into the spectacular Circle Cliffs where remarkable specimens of petrified wood (60 ft. logs) exist in the Morrison and Chinle formations.

Location: Escalante Steep Creek WSA

Source: Utah BLM Statewide Final Wilgerness EIS, 1990

Description: White Canyon cuts through the **Kaibab** Limestone to the Coconino Sandstone, the oldest stratum in the Upper Escalante drainage.

Location: Escalante Studhorse **Peaks** unit

Source: Davidson, E.S., Geology of the Circle Cliffs Area, Garfield and Kane Counties, Utah, 1967. 10

Description: Big Spencer Flat Road and the V Road, is site of thunderball iron concretions known as Moqui marbles. These oddities weather out of the Navaho

sandstone and are a popular recreation feature.

Location: North Escalante Canyons WSA

Source: Sargent, K.A., Environmental Geologic Studies of the Basin, Utah. p. 16, and Utah BLM Statewide Final Wilderness EIS, 1990. **Coal**

Description: The Waterpocket Fold tops out at Deer Pointe (7,243 feet). **Host** of the Waterpocket Fold is in the Capitol Reef National Park where it is a major

landmark.

Location: Steep Creek WSA

Source: Utah Wilderness Coalition. Wilderness at the Edge. p. 189, and Davidson, E.S., Geology of the Circle Cliffs Area, Garfield and Kane Counties, Utah, 1967. p. 61

Description: The inner gorges of the upper Moody canyons cut into the relatively harder Kaibab Limestone and Coconino Sandstone (oldest exposed layer in this region).

Location: **al t; .., old M;si** **C**
Source: Utah Wilderness Coalition. Wilderness at the Edge. p. 189

Description: Dry Valley Creek canyon. L., waterfalls, blocks. **ei . ance** to Dry

Valley Creek Canyon and consequently, the area on its natural condition. A perennial stream cuts through alluvial benches. It is relict and

probably possesses important scientific values.

Location: Mud Springs Canyon WSA

source: Utah BLM statewide final wilderness Ers. 1990

Description: The East Kaibab Monocline or the Cockscomb is unique as a Colorado

List of Historic and Scientific Objects of Interest

Page -

Plateau structure. Its alignment with the ?aunsaugant. Seevier, and Hurricane faults suggest that it too could be a fault at depth. It extends from the Colorado River north to Canaan Peak and is a major landmark.

Location: Kaiparowits Plateau The Cocksco:r..b

WSA Source: Utah 9LM Statewide Final Wilderness

E!S. 1990

Description: The Blues a Cretaceous shale badlands, richly colored and contrasting with adjacent pink sandstone cliffs that forms a significant part of the vista for visitors to Bryce Canyon National Park; The Kaiparowits formation is well exposed here represents an accumulation of exceedingly rapid proportions and an immature sedimentary region which is not well displayed in any other formation in the Colorado Plateau.

Location: The Blues WSA (near Bryce Canyon)

Source: , Welch, S.L. . Rigby, J. . Hamblin, W.K.,
A Survey of Natural Landmark Areas of the North Portion of the Colorado Plateau, 1980. p. 248

Description: Fifty mile Mountain is a complex of deep canyons; upwarps, monoclines, hogbacks and a spectacular 42 mile long Straight Cliffs wall, topping a thousand foot high cliff line of the Surransville. Morrison and Dakota formations. This complex marks the edge of the Kaiparowits Plateau.

Location: Kaiparowits Plateau Fifty mile Mountain WSA - - -

Source: Utah SLM Statewide Final Wilderness E!S, 1990

Description: Ancient coal fires of Right Hand Collet Canyon have left surface remains in the form of clinkers and deep red ash. These remains dominate the visual character of the drainage.

Location: Carcass Canyon WSA

Source: , Utah 9LM Statewide Final Wilderness E!S, 1990

Description: Arch. Span of 40 feet located in Calf canyon. and is visible from the Alvey Wash road.

Location: Burning Hills WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Burning Hills naturally occurring underground coal fire have turned steep and rugged exposed hilltops a distinctive red.

Location: Burning Hills WSA

Source: , Utah SLM Statewide Final Wilderness EIS, 1990

Description: Devils Garden oddly shaped arches (including Metate Arch) and rock formations in the hills at the foot of the cliffs marking the Kaiparowits Plateau.

Location: ~~Carcass Canyon-WSA (east of WSA)~~ - -

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: This area possesses exceptional scenic values and contains a

List of Historic and Scientific Objects of Interest

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portion of the Cockscomb, a prominent southern Utah geologic feature. the Cockscomb forms 2 parallel knife edged ridges with a bisection V shaped rough. Flatirons, small monoliths, and other colorful formations are present on the west ridge. These major features of south central Utah cover over 4,000 acres.

Location: Mud Spring WSA.

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: An interesting fold in Henrieville Creek along the northwest boundary of the WSA is of geologic interest and a sightseeing attraction.

Location: Mud Spring WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Window Wind Arch above the middle trail has scenic value because of its location on the very edge of the Straight Cliffs. The Straight Cliffs escarpment is a major landmark in south central Utah and an important scenic feature with a view from the Hole in the Rock road. Woolsey Arch is located in

Rock Creek Basin, an area of colorful Navaho sandstone and high cliffs.

Location: Fifty Mile, Mountain WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Unique because it consists of 2 prominent southern Utah physiographic systems. It includes the eastern most extension of the White Cliffs' component of the famous ascending staircase, cliff and terrace physiography, the Vermillion, White, and Pink Cliffs; and east of the Paria river, the dividing point is the landscape representative of the Glen canyon physiography of sculptured, dissected, and exposed, Navaho sandstone. The area where these merge between Deer Range and Rock Springs Bench is a highly scenic complex and colorful landscape.

Location: Paria-Hackberry WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: The Vermillion Cliffs with its associated Wingate Sandstone cliffs, colorful Chinle badlands, and canyons with their multiple colors and the intensity of coloration contribute to high scenic quality. Included in this landscape are Hackberry Canyon, Paria River Valley, Hogeeye Canyon, the Pilot

Ridge Starlight Canyon, Kirby Point area and Eight Mile Pass.

Location: Paria Hackberry WSA.

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: An area of high scenic value includes the breaks of the Wash Beds and the west wall of Cottonwood Canyon, upper tributaries to Hackberry Canyon, Death Valley Draw, and the exceptional Navajo Sandstone domes and formations on either side of lower Hackberry Canyon.

Location: Paria Hackberry WSA

Sou,rce: Utah BLMStatewide Final Wilderness EIS, 1990

Description: Four ONA's designated to preserve unique scenic values and natural wonders. North Escalante Canyon (5,800 acres), The Gulch (3,430), Escalante Canyons (480, acres), Phipps Death Hollow (12 more outside WSA)

List of Historic and Scientific Objects of Interest

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1'

Location: North Escalante Canyons WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Location: North Escalante Canyons/The Gulch ISA

Description: This area is geologically complex and has some of the most outstanding canyon scenery in the country." Harris Wash a canyon of the classic Escalante River drainage canyon form with many entrenched meanders in the Navajo

Sandstone. - - - - -

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: A unique feature of the Burning Hills is the red coloration in the landscape is the result of geological changes attributed to the naturally occurring coal fires. The coloration creates a highly scenic area.

Location: Burning Hills WSA

Source: Utah 9LM Statewide Final Wilderness EIS, 1990

Description:

The White Cliffs are high white or yellow cliffs of lava flow Sandstone. Vary in height from 600' at Deer Springs Point. bench to 1,200' at

Deer Springs Point. and the Sheep Creek Bull Valley Gorge Paria River confluence. The cliffs consistently reach a 1000' in height and the cliffline is interrupted by 8 canyons.

- - - - -

Location: Paria Hackberry WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: This area contains twenty four undeveloped springs. Ten are located in upper Paria. 6 in Hackberry, 5 on the eastern border of Cottonwood Creek. and 1 on west boundary. There are also 6 developed springs. These are

significant features in this arid environment.

Location: Paria Hackberry WSA

Source: Utah 9LM Statewide Final Wilderness EIS, 1990

Description: Phipps Death Hollow ONA (12/23/70) contains 34,288 acres managed to preserve scenic values and natural wonders.

Location: Phipps Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Arches. Peek a boo Rock, Wahweap Window, Jacob Hamblin Arch, Starlight Arch, Cobra Arch, Sam Pollack Arch, Woolsey Arch, and several more

unnamed arches and natural bridges. - -

Location: Kaiparowits Plateau and adjacent areas

Source: Sargen, T. K.A., Environmental Geologic Studies of the Kaiparowits Coal Basin, Utah.

Description: Sand calcite crystals from the Morrison Formation. **These** crystals are the first reported occurrence of this type of rocks of Jurassic age and only reported sand crystals in southern Utah.

List of Historic and Scientific Objects of Interest

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Location: Kaiparowits Plateau

Source: Sargent, **K.A.**, Environmental Geologic Studies of the Kaiparowits Coal-Basin, Utah. p. 18

Description: Circle Cliffs in the northeast portion of WSA features intensively colored red, orange, and purple Chinle mounds and ledges at the base of Wingate Sandstone cliffs. Vertically jointed cliffs banded with red, yellow, and white colors and bench tops and upper cliff faces possess innumerable orange-red Kayenta Sandstone knobs. One of most spectacular and distinctive landscapes on

the Colorado Plateau.

Location: Steep Creek WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990 .

Description: Area includes Escalante Natural Bridge (130' high, 100' span) and 4 other natural bridges and arches.

Location: Phipps...Death Hollow WSA

Source: ' Utah BLM Statewide Final Wilderness EIS, 1990

Description: The Gulch is a major geologic feature. Deeply entrenched very sheer, red straight line Wingate Sandstone walls. High ridges and slickrock peaks. Ridges drop fairly abruptly to canyons below.

Location: Steep Creek WSA-

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: LaManite Natural Bridge. Actually a large arch with good symmetry and form. Located in an impressive setting in a deep side canyon to The Gulch.

Location: Steep Creek WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Petrified wood. Upper Guich-Circle Cliffs contains large, unbroken logs of petrified wood (NEA 2,213 acres).. Maximum log length 36'. The scenic

values of these logs is enhanced by their colorful surroundings.

Location: Steep Creek WSA

Source: Utah Statewide Wilderness EIS, 1990 W FEIS 3B 19, Sargent, **K.A.**, Environmental Geologic Studies of the Kaiparowits Coal-Basin, Utah. p 13.

Description: Outstanding scenic values include the upper portion of Paradise Canyon where sandstone in the Wahweap Formation outcrops as colorful walls and cliffs. Ponderosa pine growing in the sandstone crevices the scenic values. 'Wo Sandstone monoliths or fins above Alvey Wash are prominent geological features.

Death Ridge WSA

Location

source: Utah BLM Statewide Final Wilderness EIS, 1990

DOI-2019-05 02126

Description: The area contains a unique canyon and bench system. The entire ISA contains outstanding scenery. Examples include the area east of Horse Canyon. Four canyons have isolated 10 benches of varying size. Many bench tops have

List of Historic and Scientific Objects of Interest

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intricate pattern of innumerable orange red Kayenta Sandstone knobs. Wolverine Canyon and Death Hollow have extremely narrow and convoluted sections. Another feature. Harris Wash a canyon of the classic Escalante River drainage canyon form with many entrenched meanders in the Navajo Sandstone.

Location: North Escalante Canyons/The Gulch ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Mollie's Nipple, an erosional remnant is a major landmark in the area.

Location: Kaiparowits Plateau.

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Natural Arches. Sam Pollock Arch, located at the head of a tributary drainage of Hackberry Canyon, and Starlight Arch located west of No

Man's Mesa. - - - - -

Location: Paria Hackberry WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Area of diverse geology represented by spectacular deep canyons. The Escalante River canyon is 1100 feet deep. The canyon walls are rough and broken and the canyon is narrow and it meanders. white to golden sandstone has been eroded into expanses of slickrock. Death Hollow Canyon is 1,000 feet deep and meandering. The extensive upper basin through which Mamie Creek flows is a extremely dissected area of canyons, tanks, other formations. Red layers of

Carmel Formation cap-high mesas and ledges of the exposed Kayenta Formation.

Location: Phipps Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Petrified wood deposits just west of the Old Paria Townsite and in Hackberry Canyon. Both are in the Chinle Formation.

Location: Paria Hackberry WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: All the topographic features of the Kaiparowits region have been developed in sedimentary rocks. The Kaiparowits Plateau is a slightly tilted sedimentary mass that extends as a narrow mesa from the High Plateaus to Glen Canyon 70 miles distant. Its culminating point, Canaan Peak is an outlier Table Cliff Plateau; the Paria Plateau is a huge block of sandstone, the Waterpocket monicline is a ridge of folded rock intricately dissected and flanked by hogbacks, and the broken comb in the vicinity of Paria is the edge of sandstone beds upturned in the East Kaibab fold. The Circle Cliffs are inward facing walls of sandstone that rim an oval depression. These prominent features are but large scale examples of the mesas, buttes, and ridges that characterize the landscape of southern Utah.

Location: Kaiparowits Plateau region

source: Gregory, H.E. and Moore, R. C. The Kaiparowits Region; A Geographic and Geologic Reconnaissance of Part of Utah and Arizona. 1931.

Description: **Paria River** from Colorado River to its source, identified by NPS as

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Interest,

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possessing values that may be of national significance, potential to be included in the National Wild and Scenic River System.,

Location: Paria hackberry WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Escalante River from Lake Powell to its source , a section of **14.9** miles was designated as for study as a candidate Wild and Scenic River by the Secretary of the Interior on 10/11/70.

Location: Phipps Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

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Description: Lower Calf Creek Falls. Calf Creek Canyon is characterized by red alcoved walls, 2' waterfalls, and extensive expanses of white slickrock. Lower Calf Creek Falls drops 126' and Upper Calf Creek's drop is 86'. High educational

values associated with interpretation of these areas.

Location: Phipps Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: The area contains 40 miles of perennial streams, a significant feature in this arid environment.

Location: Phipps Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

, Objects of Paleontologic Interest, August, 1966

Description: Fossil assemblage photographs. Typical mollusks from Tropic Shale, south of Escalante include straight coned phalopods, ammonites, gastropods, and

pelecypods and Cretaceous sharks teeth from the Straight Cliffs Formation.

Location: Kaiparowits Plateau

Source: Sargent, K.A., Environmental Geologic Studies of the Kaiparowits Coal Basin. Utah. pp 14-15

Description: Gray Cliffs/Pink Cliffs This sequence of rocks may contain one of the best and most continuous records of Late Cretaceous terrestrial life in the

world. Formation has yielded early lizards, dinosaurs, crocodilians, mammals, turtles, mollusks.

Location: Kaiparowits - The Blues WSA

Source BLM, Escalante/Kanab RMP Grand Staircase-Escalante National Monument Environmental Analysis
 : 1994

Description: Fossils deemed by the Museum of Northern Arizona in a 1991 study to be of major importance. They are found in the Cretaceous Wahweap Formation outcrops include abundant fragments of turtle shells and dinosaurs. as well as several crocodile teeth. There is an excellent chance that fossils will be found

Location: Kaiparowits Plateau Nipple Bench unit'

Source: BLM, Kaiparowits power project environmental impact statement, 1976

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Desc::: ip ::on: The Straight Cliffs Formation is limited to the southern Utah area. It contains primitive mammals including one of the potentially oldest marsupial fossils identified.

Locat::ior:: Kaiparowits Plateau

Source:, SLM, Warm Springs Project Preliminary Draft EIS, 1996

Desc::: ipc::on: Invertebrate and vertebrate specimens found Straight Cliffs, Tropic Shale. and Dakota Formations. 13 collection sites recorded {gastropods, cephalopods in upper Cretaceous Formations, vertebrate in Dakota and Tropic

Sh lesl. Likely to occur along entire length of the Straight Cliffs

Location! Carcass Canyon WSA

Source: Utah BLM Statewide Final Wilderness EIS. 1990

Descript::ip_n: The Kaiparowits is of interest in understanding the evolution of mammals and other terrestrial vertebrates. Very little is known of Cretaceous mammals prior to the latest part of that period. The mid Cretaceous lian twilight zone, is spanned by the fossiliferous, terrestrial roe; units of the Kaiparowits region! They contain unique evidence bearing on the early diversification of important mammalian groups of the Late Cretaceous.

The thickness, continuity, and broad temporal distribution of the Kaiparowits sequence provides the opportunity to document changes in terrestrial vertebrate assemblages over a wide span of Late Cretaceous time.

Locatidn: Kaiparowits Plateau

Source: Eaton, Jeffrey G. and Cifelli, Richard L. Preliminary report on Late Cretaceous mammals on the Kaiparowits Plateau, southern Utah, 1988

Description: Extr ely significant fossils including marine clid orackish water mollusks, turtles, crocodillians, lizards, dinosaurs, fishes, and mammals have

been recovered from the Dakota formation, Tropic shale, Straight Cliffs Formation. (Tibbet Canyon, Smoky Hollow, and John Henry members), ClUld Wahweap formation in the area around the proposed Andalex mine and some localities lie dii;:ectly along

the proposed haul route. This sequence of rocks (including the overlying Wahweap and Kaiparowits formations) contain perhaps the best and most continuous record of Late Cretaceous terrestrial life in the world

Locat::ion: Kaiparowits Plateau

Source: Eatdn, Jeffrey G., Personal correspondence to Mr. Mike Noel, BLM, 1991

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Objects of Prehistoric Interest

Description: Sixty sites have been recorded and the potential for additional sites is exceptionally high. Sites discovered to date include lithic scatters, rockshelters (some w/storage cists and rock art), 1 pithouse village site and 1 structure (probably of Anasazi origin). Some of the rock art and rock shelter and 1 campsite are potentially eligible for nomination to the NRHP.

Location.: North Escalante Canyons/The Gulch ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Friendship Cove Pictograph site nominated to **NRHP**. **This** site consists of a set of large Fremont style pictographs painted on **the face** of a

large sandstone cliff. - - - - -
near

Location: Phipps Death Hollow ISA, eastern part - -

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Forty four sites of diverse types have been recorded in the area. rock art (petroglyph and pictographs sites (2 from Fremont culture), 1 Pithouse village site, lithic scatters of Paiute and Anasazi and 6 rockshelters have been discovered. Potential for more sites is good.

Location: Phipps Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Situated at the intersection of three major prehistoric cultures the Plateau has long been a magnet for archeological study. It has been recognized that the Kaiparowits Plateau might contain important clues that would

aid in answering questions in the archeology of the Southwest."

Location: Kaiparowits Plateau - -

Source: Utah Wilderness Coalition. Wilderness at the Edge. p. 147 and Lister, Florence C., Kaiparowits Plateau and Glen Canyon prehistory, an interpretation based on ceramics, 1964.

Description: Fifty mile Mountain Archeological District contains more than 400 sites including Anasazi habitations and granaries. Important scientific value. "Some of the most significant cultural resources in the Four Corners area."

Archaeological: District (4V, 325 acre) has been nominated to NRHP. Majority of sites are masonry structures (of 1 to 10 rooms). Most are of Virgin Anasazi origin but include sites attributed to, Fremont, Hopi, and Paiute. **Navaho are also**

expected to occupy the area. 4,000 total sites may be located in WSA.

Location: Fifty mile Mountain WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: **Sixty-five sites** have been recorded. They include lithic and ceramic scatters, masonry structures (granaries and storage cists), **one** rock shelter. Masonry and some lithic/ceramic associated with Virgin **Anasazi/Kayenta Anasazi**. Two are Pueblo II: III time period. Some sites are associated with Paiute age or Archaic age peoples. At least 8 sites in this **area are** eligible for nomination to the P.

Location: Wahweap WSA

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Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: High concentration of prehistoric sites. Although surveys are incomplete for the Warm Creek unit more than 600 sites have been found ranging from lithic scatters and campsites to rockshelters.

Location: Kaiparowits Plateau/Warm Creek unit.

Source: BLM, Kaiparowits power project environmental impact statement, 1976

Description: Part of a larger area extensively used by the Kayenta Anasazi and later the Southern Paiute Indians. Site densities expected to be moderate to high.

Location: Kaiparowits Plateau/Squaw Canyon unit

Source: ERT. 1980, Kaiparowits coal development and transportation study, final report

Description: Prehistoric site densities are high on top of Nipple Bench. Sites represent Fremont, Virgin Anasazi and Kayenta Anasazi. The sites represent complex associations of features and artifacts and indicate permanent or extensive camps in rock shelters.

Location: Kaiparowits Plateau/Nipple Bench unit

Source: Fish, Paul, Preliminary Report Kaiparowits Power Project

Description: Six sites have been recorded. One is Pueblo II **Anasazi** occupation site, with others unidentified.

Location: Burning Hills WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: One hundred-five sites (primarily lithic scatters) **have** been recorded covering a broad period of occupation. Ten rockshelters with storage cists or storage caches, 1 w/masonry room, 3 w/granaries associated with Anasazi or Fremont have been discovered. Additional sites, include petroglyph and pictograph panels associated with shelter-sites and 1 burial site.

Location: Carcass Canyon WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: One hundred thirty-four sites represent virtually all known prehistoric cultures in southern UT (Anasazi, Fremont, Anasazi, Southern Paiute). 8,000 years of prehistory are represented. The sites primarily

represent temporary habitation, by hunter gatherers..

Location: Death Ridge WSA

Source: BLM Utah Statewide Wilderness EIS, 1990, and Hauck, F.R., Cultural Resource Evaluation of South-Central Utah, 1977-1978

DOI-2019-05 02136

Description: The area contains 41 recorded sites and based on surveys may

contain exceptionally high densities of sites.. Known sites include rockshelters, pit houses, lithic scatters, and masonry structures. Pictograph panels are in Deer Creek Canyon and petroglyphs are found in Snake creek canyon.

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A study located and estimated 612 sites per 23,000 acres, 564 potentially eligible for nomination to the NRHP (southern border of WSA). Another inventory estimated 360 sites per 23,000 acres at the northern border of the WSA.

Location: Faria Hackberry WSA

Source: Utah L:LM Statewide Final Wilderness EIS. 1990

Description: The Kayenta Pueblo culture inhabiting the Straight Cliff and portions of the Escalante River drainage between A.D. 1000 and 1200 **were** likely in contact with the Fremont culture. Although both inhabited the **area at** the same time and competed for limited agricultural lands there is no evidence of open conflict during this time. Some modifications of pottery making technique between the two cultures indicates that there was **trade and** exchange between them. Little is **known** positively about the Kayenta culture/ **an** ci
Additional
research in this area could provide valuable insight on interactions between the

two cultures. - - - - -

Location: Straight Cliffs WSA

Source: Lister, ~~Kaiparowits Plateau and Glen Canyon Prehistory: An~~
interpretation based on ceramics. 1964.

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Objects of Historic Interest

Cesc::: iption: Dance Hall Rock/Hole in the Rock Trail. While the Hole in the Rock Trail was under construction in 1879, Mormon Pioneers camped at Fortymile Spring and held meetings and dances in the shelter of Dance Hall Rock. Designated

Historical site by DOI-1970 -----
Location: Two miles west of the Glen Canyon NRA on the Hole in the Rock Trail

Source: Utah Wilderness Coalition; 1. Wilderness at the Edge, p. 1:82

Description: Historic route constructed in 1879 to provide access from Escalante to areas on the opposite side of the San Juan River in Southeast Utah.

Location: Historic trail running from Escalante to Hole in the Rock in Glen Canyon

-NRA- - - - -

Source: Lambrechtse, Rudi. Hiking the Escalante, 1985

Description: Boulder Mail Trail. Used to carry mail between Escalante and Boulder beginning in 1902. Much of trail still visible where necessary to construct through slickrock. Nominated to NRHP. Popular backpacking route.

Location: Phipps Death Hollow, low ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Boynton Road. Constructed 1909 as short cut between Escalante and 2 years because of flooding. Salt Gulch. Abandoned after of its 10 miles: 9 visible over approx

Location: Phipps Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Escalante Boulder telephone line: First Boulder Escalante telephone line constructed by Forest Service in 1911 providing first phone service to area. Still visible between Ancone Flat and Sand Creek.

Location: Phipps Death Hollow - - -

ow

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Washington Phipps grave. A historical grave site of an early pioneer shot in 1878 in a dispute with his partner John Boynton.

Provided the namesake for the area. - - - - -

Location: Phipps Death Hollow

Source: Lambrechtse, Rudi Hiking the Escalante, 1985

Description: Old Boulder Road. Main route between Escalante and Boulder

until the CCC built Hell's Backbone Road and Highway 12 •s to replace it
.. in

1930 -

Location: Phipps Death Hollow ISA

Source: UtahBLMStatewideFinalWildernessEIS, 1990

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Description: The Hattie Green mine, an early copper working located on the crest of The Cockscomb.

Location: The Cockscomb WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Old Paria Townsite was established in 1874 on the bench above the eastern bank of the Paria River by Mormon settlers who attempted to farm the bottomlands. Site was abandoned in 1890.

Location: adjacent to Paria-Hackberry WSA

Source: Abby, Edward and Hyde, Philip. Slickrock p.46

Description: Old Paria Townsite movie set. Built in the 1960's to film several

~~movies. Now, abandoned but still a popular recreation destination.~~

Location adjacent to Paria-Hackberry WSA

Source: Abby, Edward and Hyde, Philip. Slickrock p.46

Objects of Biological Interest

Description: Riparian zones are corridors for many of the region's species, including neotropical migrant birds. The corridors (including the Escalante, and Paria Rivers and Johnson Creek and their tributaries) bisect the region north to south, allowing for exchange of individuals among different animal populations. The importance of movement corridors to the long term viability of animal populations is of great scientific and management interest. This area would afford many opportunities to enhance this ecological issue.

Location: Entire monument proposal including the Escalante area, Kaiparowits Plateau, and areas west to Kanab including the Escalante, Paria rivers and

Johnson Creek

Source: Edwards, Tom, 1996; Knopf, 1985; Armbruster and Lande 1993; Beier, 1993; Belovsky, 1987; Brown, 1971; Davidson et al. 1996; Diamond, 1981; Fahrig and Merriam, 1985; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978; Primack, 1993; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al., 1986; Willis, 1974.

Description: 25 miles of riparian corridor in unit; Connects mountains to desert lowlands. Has great concentration of hanging gardens and riparian vegetation including relictual populations in canyon bottoms. Also supports many rock crevice communities. Connects other protected areas. High plant endemism, due to large extent of parent material exposure.

Location: Escalante River

Source: BLM Wilderness EIS; Knopf, 1985; Shulz, 1993; Armbruster and Lande 1993; Beier, 1993; Belovsky, 1987; Brown, 1971; Davidson et al. 1996; Diamond, 1981; Fahrig and Merriam, 1985; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978; Primack, 1993; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al., 1986; Willis, 1974.

Description: Riparian corridor links high country to lowland desert scrub. Connects protected areas. Has high concentrations of isolated communities; hanging garden, rock crevice and canyon bottom communities. Also has an abundance of packrat middens.

Location: Paria River

Source: Van Devender and Spaulding, 1979; BLM Wilderness EIS; Knopf, 1985; Shulz, 1993; Armbruster and Lande 1993; Beier, 1993; Belovsky, 1987; Brown, 1971; Davidson et al. 1996; Diamond, 1981; Fahrig and Merriam, 1985; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978; Primack, 1993; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al., 1986; Willis, 1974.

Description: Fifty miles of perennial streams including the Paria River (which is a wild and scenic river inventory segment). Riparian vegetation covers 500 acres.

Location: Paria Hackberry WSA

- - - - -
Source: Utah BLM Statewide Final Wilderness EIS, 1990

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Description: Three major floras meet in this area. Plants from the Mojave, Arizona deserts and northern Utah are all found here, with a few species from the Great Plains. The Colorado Plateau is surrounded by high mountains, isolating the flora and fauna.

Unlike many ecosystems, the plant density, diversity and stature within the monument is determined more by substrate than climate; Consequently, isolation, plus the great diversity of substrates (providing a wide range of soil chemistry and physical characteristics) found within close proximity to each other has resulted in a high level of plant endemism in this area. Eleven species found in the monument are found nowhere else in the world.

Of plants that occur only in Utah or on the Colorado Plateau, 125 species occur in the monument. The Canyonlands portion of the Colorado Plateau, much of which is contained in the monument, is considered the richest floristic region in the Intermountain West, and contains 50% of Utah's rare and endemic plants.

90% of these rare and endemic species are found on substrates typical of most of the monument. Of the Canyonlands area, the monument area is considered one of the most significant for endemic populations, with more than 10% of the flora being found nowhere else.

Of additional significance is that many of the plants in the monument are diploid species. This means they represent the basic genetic stock from which polyploid species in the area evolved. This makes this area of great significance to plant evolutionary biologists and provides a unique opportunity to study the evolution and speciation of plant species, as well as the structure and dynamics of plant communities independent of climate.

Location: Entire monument

Source: Kaiparowits Power Project EIS; Axelrod, 1960; Utah Natural Heritage Program plant database; Nabhen and Wilson, 1996; Schulz, 1993; Albee et al., 1988; Welsh, 1974; Welsh et al. 1975; Hintze, 1988; Dott, 1996; Shreve, 1942; Cronquist et al., 1977; Utah Natural Heritage Program plant database

Description: The Colorado Plateau was uplifted and downcut without deformation. As a consequence, large areas of unmixed geologic parent materials are exposed, and plants must adapt to large array of highly distinct parent materials. These substrates are sharply demarcated, and often occur within a few meters of each other. This situation offers the unique opportunity to examine the role of soil physical and chemical characteristics in determining plant and animal community structure independent of climatic variables, an important ecological question. It also results in different plant community structure and dynamics than is generally observed in other ecosystems. This area contains shales, siltstones, mudstones, sandstones and limestone of differing depths, and deposited in a variety of environments (marine, freshwater and eolian). Each soil depth and depositional environment has very different chemical and physical characteristics. As a result, there is a great diversity of substrates in this

area, each supporting unique plant community.

Location: Entire monument

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Source: Hintze, 1988; Nabhen and Wilson, 1996; Gross, 1987; Dott, 1996; Roberts, 1987

Description: The presence of steep elevational gradient gives the opportunity to sort out the role of temperature and precipitation in structuring plant and animal communities; Elevational gradients have traditionally been used by scientists as a way of examining factors controlling biotic community structure.

Juxtaposition of diverse substrates and elevational gradients give an unparalleled opportunity to determine the respective roles of soil.

chemistry, physical characteristics, elevation . J, "ainfall and
temperature in structuring biotic communities. In
addition, it all:ows for 'high iodiversity in a small are
a. - - - - -
Lc::>cation: Entire monument

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 Source: Kaiparowits Power Project EIS; Axelrod, 1960; Utah Natural Heritage Program plant database; Nabhen and Wilson, 1996; Shulz, 1993; Albee et al., 198; Welsh, 1974; Welsh et al. 1975; Hintze, 1988; Datt, 1996; Shreve, 1942; Cronquist et al.. 1977

Description: The Escalante Plateau is the home to approximately 300 species of amphibians, birds, mammals, and reptiles. This diverse set of wildlife species includes over 20 species of birds of prey including the bald eagle, peregrine falcon, and was the historical range of the condor. The region contains 2 of the 7 recognized centers of endemism for fishes of the western United States.

Location: Escalante Plateau

More; a ids ne.;l 1996; ;o;;d a;ds, 1996."s,bhk;, R J., and Zar, , 1976

Description: Contains many different geologic substrates (therefore soils with different physical and chemical attributes) in a small area. The majority of endemic in Utah are found on these particular substrates; consequently, this area is expected to have a high concentration of endemics.

Location: Escalante along boundary of Glen Canyon NRA and Capitol Reef National Park

Source: Utah Natural Heritage Program plant database; Nabhen and Wilson, 1996; Shulz, 1993; Albee et al., 1988; Welsh, 1974; Welsh et al. 1975; Hintze, 1988

Description: Large **expanses of, fine-textured soils (Morrison, Mancos/Tropic)** shales support large number of endemic plant **species**, fossils.

Location: Henrieville to Escalante

Source; Hintze, 1988; Shulz, 1993; BLM Wilderness EIS

Description: An exposed monocline with many soils/substrates in close juxtaposition provides tremendous biodiversity of both general and endemic flora. High salt content of stream provides habitat for salt tolerated riparian plants. Provides a elevational gradient from ponderosa pine to desert scrub. In addition, the rocky substrate has provided refugia for many Arcto Tertiary plants, providing a unique opportunity to examine the effects of ancient floral presence in the structuring of present day plant communities. This area also supports a very high diversity of both general and endemic flora.

Location: The Cock Cornb

Source: Hintze, 1988; Shulz, 1993; Albee et al. 1988; Axelrod, 1960; Welsh, 1978; Stevens, 1992; Dott, 1996

Description: Contains a concentration of many different geologic substrates/soils with different physical and chemical attributes. This area has a high concentration of endemics. This boundary also abuts protected areas (Glen Canyon, Capitol Reef), thereby effectively increasing the value of all three areas for biological conservation. In addition, the Waterpocket Fold has isolated two outcrops of the same parent material. These two areas now support different floras. This presents an outstanding scientific opportunity to explore processes of speciation.

Location: Far eastern

boundary- - - - -

Source: Hintze, 1988; Shulz, 1993; Albee et al., 1988; Axelrod, 1960; Welsh, 1978; Stevens, 1992; D'ott. 1996; Armbruster d Lande, 1993; Fahrig and Merriam, 1985; Beier, 1993; Belovsky, 1987; .Brown, 1971; Davidson et al. 1996; ,Diamond,

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1981; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994.; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978; Primack, 1993; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al., 1986; Willis, 1974.

Description: This is an exposed monocline. Consequently, many substrates (Summerville, Morrison, Dakota, Tropic, Entrada, Navajo, Wingate and Carmel) are exposed directly next to each other, providing an opportunity for studies of ecological processes independent of climate. This monocline also has an elevational gradient, facilitating the study of effects of temperature and moisture on community dynamics. In addition, the rocky substrate has provided refugia for many Arcto Tertiary plants, providing a unique opportunity to examine the effects of ancient floral presence on the structuring of present day plant communities. This area also supports a very high diversity of both general and endemic flora.

Location: Straight Cliff area - - - - -
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Source: Hintze, 1988; Shulz, 1993; Albee et al., 1988; Axelrod, 1960; Welsh, 1978.

Description: Diversity of plant life ranging from low desert shrub to Ponderosa Pine (less than a mile apart) enhances the study and observation of ecology. 3 small stands of Ponderosa pine in Alvey Wash.

Location: Ridge WSA - - - - -
th

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Contained within the monument are 3-5 spatially separated areas where the same substrates are exposed in close proximity to each other. In addition, there are 5 elevational gradients along riparian corridors. This is critical for replicated scientific work to be conducted.

Location: Entire monument

Source: Hintze, 1988; USGS Topographical Maps

Description: Riparian corridor with elevational gradient, connecting desert low lands to the high country. Vermillion, White, Pink Cliffs (Triassic, Jurassic, Cretaceous material);

Location: Johnson's Creek - - - - -

Source: Hintze, 1988; USGS Topographical maps; Beier, 1993; Noss, 1992, 1993

Description: Presence of aspen on Pleasant Grove, Steer Mile Mountain, Canyon, and Pinto Mare Canyons.

Location: Fifty Mile Mountain WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description.: Protects lands at low elevations. Sites frequently rich in species diversity. The range of elevation in these areas from approximately 4500 8300 feet encompasses a wide variation in elevation and will capture the full

diversity of plant and animal species in the region.

Location: Entire monument proposal including the Escalante area, Kaiparowits Plateau, and areas west to Kanab

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Source: Hintze, 1988; Utah BLM Final Wilderness EIS, 1990

Description: The monument contains an abundance of hanging gardens, tinajas, canyon bottom, dunal pockets, salt pocket and rock crevice communities.

These small, isolated populations often contain unusual, often relictual plants and animals. Hanging gardens and canyon bottom communities harbor riparian plants and their pollinators, as well as unique vertebrates (bats and small mammals) and soil fauna. Tinajas are

important aquatic resources, and contain a diverse array of tadpole, fairy and clam shrimp, amphibians, algae, water beetles, other crustaceans, snails, mosquito and gnat larvae and aquatic/riparian plants.

Highly saline areas are found around many seeps and streams, and consist of plants and animals adapted to highly saline conditions. Dunal pockets contain species adapted to shifting sands, while rock crevice communities consist mostly of slow growing species that can thrive in extremely infertile sites.

These communities offer a chance to examine gene flow dynamics, and to distinguish the respective role of pollen versus seeds.

They offer an opportunity to study ground water flow dynamics in the absence of significant fluvial processes, and

island biogeography of plants, pollinators and ground dwelling biota. They also are highly simplified, discrete ecosystems, making them ideal for elucidating basic ecosystem processes.

Location: Entire monument

Source: Nabhen and Wilson, 1996; Harper et al., 1994; Welsh et al., 1993; May et al., 1995; Fowler et al., 1995; Graff, 1988

Description: These canyons provide a high concentration of isolated, unique plant and invertebrate communities: hanging garden, rock crevice, and canyon bottom communities. Many relictual plant species can be found in these communities.

Pack rat middens are abundant, providing paleoclimatic and paleovegetation information.

Location: Escalante Canyons

Source: Axelrod, 1960; BLM Wilderness EIS: Van Devender and Spauling, 1979; Fowler et al., 1995; Nabhen and Wilson, 1996

Description: Dunal pockets contribute Great Plains species to the flora. These are unique, isolated plant communities.

Location: Cockscorn to Kaiparowits

Source: Hintze, 1988

Description: Unique, isolated communities are located throughout the monument. These include hanging gardens, tinajas, canyon bottom, dunal pocket, salt pocket and rock crevice communities. They provide great opportunities for examining

evolution, gene flow, island biogeography and, other ecological principles.

Location: Entire monument

Source: Case and Cody, 1988; Diamond, 1981; Dott, 1996; Harris, 1984; Ludwig and Whitford, 1981; Fowler et al., 1995; Nabhen and Wilson, 1996; Roberts, 1987; Rice, 1994; Axelrod, 1960

Description: Biological conservation theory and literature suggests that large

contiguous conservation areas increase both extent and probability of
population survival, increases protection of migratory pathways, and is the
means of conserving aquatic and riparian

communities.

Location: Entire monument

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Source: Soule, 1987; Davidson et al., 1996; Miller, 1961; Minckley and Deacon, 1968; Armbruster and Lande, 1993; Fahrig and Merriam, 1985; Beier, 1993; Belovslcy, 1987; Brown, 1971; Davidson et al. 1996; Diamond, 1981; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IijCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978; Primack, 1993; Saunders et al., 1991; Shaffer,, 1981; Soule, 1987; Soule and Wilcox, 1980; wegner and Merriam', 1979; Wilcove et al., 1986; Willis, 1974.

Description.: The connection with Glen Canyon provides a larger protected **area**. It also provides low desert vegetation as part *of* the vegetational gradients. Large areas are important for maintaining the evolutionary potential of plants and animals, allowing for the exchange of genetic material along the **separate**

populations that constitute population: - - - - , - - - -

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Location: Common boundaries and riparian connections with Glen Canyon NRA, Capitol Reef NP, Box Hollow Wilderness and Paria. Wilderness

Source: Hintze, 1988; Shulz, 1993; Albee et al., 1988; Axelrod, 1960; Welsh, 1978; Stevens, 1992; Datt, 1996; Armbruster and Lande, 1993; Fahrig and Merriam, 1985; Beier. 1993; Belovsky, 1987; Brown, 1971; Davidson et al. 1996; Diamond, 1981; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978; Primack, 1991; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al., 1986; Willis, 1974.

Description: Cryptobiotic soil crusts are critical for soil stability, nutrient availability for vascular plants and normal soil surface temperatures. These crusts are extremely fragile and easily disrupted by soil surface disturbances such as trampling or off road vehicles. Since the soils in the monument are highly susceptible to erosion, it is important that these biocrusts be protected so they stabilize these erodible soil surfaces. In addition, these ecosystems have few nitrogen fixing plants. Since these crusts provide nitrogen to these

soils, they are a critical part of these nitrogen-limited ecosystems.

Location Entire monument

n: - -

Source: Belnap, 1994, 1995; Belnap and Harper, 1995; Belnap et al., 1994; Jefferies, 1989; Harper and Marble, 1988; Johansen, 1993; Mack and Thompson, 1978; Fleischner, 1994

Description: Disturbance of most soil surfaces in the monument area will result in soil surface temperature changes, as bio-crusted surfaces are darker than the substrates underneath them. The expected lowering of temperature with disturbance would result in cooler soil temperatures, and later spring plant germination and lower nutrient uptake rates. This may adversely effect desert plant growth, in early spring. Surface temperature also influence foraging and burrowing patterns for many soil invertebrates, and many effect community dynamics of these species..

Location: Entire monument

Source: Ludwig and Whitford 1981; Belnap 1995

Description: Ecosystems in this area are some of the most **'stable'** documented to date, as both large and small scale disturbances are limited spatially and temporally. Very little of this area was glaciated in the Pleistocene. Most plant communities evolved without fire or grazing by large ungulate herds, as evidenced by characteristic soils and the flora. Catastrophic events are minimal, with the exception of wash bottoms. Microsite disturbances are minimal as well, as most soils support very low populations of invertebrates. 1880

photos repeated in 1990 show many sites virtually unchanged, with the same tree, shrub and grass individuals present, indicating very low species turnover rates -- in this region relative to other ecosystems. In addition, dead tree branches can still be found in virtually the same condition as they were 100 years ago, indicating plant tissue decomposition rates are extremely low in this region. This makes this area highly unique, as most ecosystems are believed to be structurally disturbed. In this region, ecological processes can be studied independent of the effects of disturbance to give us greater insight into their functioning (i.e. factors controlling exotic plant invasions, species-species interactions, etc.)

Soil physical, chemical and biological features appear to be both **easily** damaged (low resistance) by surface disturbance and have very slow recovery rates (low resilience) when compared to other deserts or more mesic systems. **This** may be a result of evolution of this ecosystem evolving in the relative absence

of disturbance (Belnap 1995; 1996). Therefore, this area is important in the study of how disturbance influences community dynamics, including species-species interactions, and for understanding how to restore these fragile systems. This also means that this area is highly susceptible to damage by different land uses, including recreation and grazing.

Location: Entire monument

Source: Belnap, 1995, 1996; Belnap et al., 1994; Mack and Thompson, 1982; Fleischner, 1994; Klein, and Harper 1972; Harper et al., 1994; Webb, 1994; Rogers, 1982; Pickett and White, 1985; Moldenke, 1995; Evans and Ehleringer, 1993; Turner et al. 1993; Iverson et al. 1981; Webb and Wilshire 1981; Larsen 1996; Bowers et al. 1994

Description: Isolation of this area has resulted in minimal human impacts. Many of the ecosystems found in this area have received little, if any, human use and the type and extent of disturbance that has occurred is known. In addition, there are large areas unbroken by roads. This is essential to the protection and conservation of plant and animal species.

Location: Entire monument

Source: Wilcox et al. 1986; Wilcox and Murphy 1985; Mader et al., 1990; Osley, et al., 1974; Rost and Bailey, 1979; Witmer and Calesta, 1985

Description: The monument lacks any areas that have been invaded to any large extent by exotic species. There are few such areas in the Intermountain West, and they can provide invaluable information in understanding the ecology and dynamics of exotic plant invasion. These areas aid scientists in understanding what makes systems resistant to such invasions, and thus help land managers predict what areas are susceptible to invasion and restore already-invaded regions.

Location, Entire monument

Source: Billings, 1994; Fleischner, 1994; Forcella and Harvey, 1983; Gross, 1987; Hester, 1990; Loope et al., 1988; MacMahon, 1987; Pelant, and Hall, 1994

Description: Six threatened or endangered candidate species are located within or near its area.

Location: Wahweap WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Contains Peregrine falcon (endangered) and 6 special status species. DOI-2019-05 02155

species and 5 special status-plant-species: - - - - -
Location: Mud Spring WSA

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Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Habitat for Swainson's hawk, golden eagle (Sensitive) and peregrine falcon (endangered).

Location: The Blues WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Peregrine falcon and bald eagle (endangered). **8 animal and 5 plant**
species of special status.

Location: Paria-Hackberry and Cockscomb WSA and **Wahweap WSA**

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Thirteen species of raptors are known or suspected of nesting in the WSA

Location: ~~Burning Hills WSA~~ -

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Relict plant community in the upper part of Dry **Valley** •probably
possesses :important
- - - - - scientific values•

Location: Mud Spring, Carry-on WSA -

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Unique relict plant community of pink vegetation accessible only by a steep trail. One or the few remaining
unaided plant communities in Utah. No Man's Mesa **RNA** was designated as an ACEC in
1986. Such areas are invaluable to science. They deserve restoration and management goals to
administration of lands. Such areas also critical to scientists
who are trying to understand the natural functioning of ecosystems.
Grasslands are especially valuable, as almost all have been heavily grazed for

over a century.

Location: Paria-Hackberry WSA (No Man's Mesa and Little No Man's Mesa)

Source: Utah BLM Statewide Final Wilderness EIS, 1990 -- d. ; ; • and Barp ,
1972 .
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Description: Four Mile Bench Old Tree Area. Unique area of extremely old (1,400
years) pinyon and juniper trees. Unique scientific values on over 1,000 acres.

Location: Wahweap WSA

Source: Utah BLM Statewide final Wilderness EIS, 1990

Description: This region is at the northern end of areas that receive summer monsoonal rains; and is at the southern end of areas that receive winter rains. This distinction is very important to the physiological functioning of plants in this moisture-limited area, as even minor changes in temperature and/or rainfall may lead to major differences in water availability, and consequently, plant metabolic processes. Climate change is expected to alter both rainfall timing and amount, as well as temperature. This, in turn, would alter plant physiology, water use patterns and community composition in this

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region, making the monument an excellent place for studying global climate change.

Location: Entire monument

Sources: Ayyad 1981; Graff 1988; Van Oevender and Spaulding 1979; Wagner 1981

Description: Unlike most deserts that are primarily depositional environments, the CP is an erosional one (Welsh 1979; Nat Hist). This contributes to high _____, _____, as substrate material is not mixed. In addition, it makes this region highly susceptible to soil loss when surfaces are disturbed. This soil loss has a negative impact on plant and aquatic communities, as well as dam sediment loads.

Location: Entire monument

Source: Welsh, 1979; Harper et al., 1994

Description: The effect of scaling up and down are not known for many ecological processes. The multitude of variably sized, discrete watersheds found in this area offer a unique opportunity to test the effects of scaling for hydrological and biological processes. In addition, the close spacing of these watersheds offers a chance to separate the effects of area per se from other environmental factors on community structure.

Location: Entire monument

Source: Allen and Hoekstra 1987; Reice 1994; Pickett and White 1985; RQsenweig 1985

Description: Semi-arid and arid lands of the western United States are highly susceptible to desertification. The lack of natural disturbance in much of this area offers the opportunity to study the effects of different _____ and levels of _____

Parameter used to better understand the steps leading to desertification.

Location: Entire monument

Source: Dregne, 1983

Description: This area contains few exotic plants. Having this resource gives the opportunity to better understand what factors inhibit or facilitate exotic plant invasions. Roads have been heavily implicated in facilitating exotic plant invasion; while intact Cryptobiotic soil crusts and less favorable soil chemistry may inhibit such an invasion. Invasion could fundamentally alter these

communities, by altering species composition, community _____ and fire cycles

Location: Entire monument

Source: Monsen and Kitchen, 1994; Kelly 1996; Harper and Marle 1988; Davidson et al. 1996

Description: Quaternary resources are abundant in the monument. Pack rat middens enable reconstruction of paleoclimates and paleovegetation while Pleistocene animal remains found in alcoves.

Location: Entire monument Source: _____

Harper et al. 1994

Description: Unlike more mesic ecosystems, there is little evidence that desert communities have traditional successional sequences. There is little or

no modification of soils or other site characteristics by previous occurring plants. Understanding of this is important for restoration efforts. The monument offers an excellent opportunity to study this phenomenon independent of climate and disturbance factors.

Location : Entire monument

Source: Barbour, 1981; MacMahon, 1987; Shreve, 1942; Dott, 1996

Description: Peregrine falcon and Bald Eagle use these areas. Areas are habitat for 7 plant and 9 animal species considered sensitive.

Location: Death Ridge and Fifty Mile Mountain. WSAs

Source: Utah Statewide Wilderness Study Report,

199

Description: Peregrine falcon and Bald Eagle use these areas. Areas are habitat for 8 plant and 7 animal species considered sensitive.

Location: Phipps Death Hollow ISA and Steep Creek WSA

1991

Source: Utah Statewide Wilderness Study Report, 1991

Description: Peregrine falcon and Bald Eagle use these areas. Areas are habitat for 9 plant and 7 animal species considered sensitive.

Location: North Escalante Canyon, Pine Gulch and Carcass Canyon WSAs

Source: Utah Statewide Wilderness Study Report, 1991

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